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Revision A

Removal Action Work Plan for Disposition of Mixed Waste from the 183-H Solar Evaporation Basins

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

United States Department of Energy
P.O. Box 550
Richland, Washington 99352

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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J.L. Westcott, Fluor Hanford, Inc.

September 2003

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ACRONYMS

AEA	*Atomic Energy Act of 1954*
AJHA	automated job hazard analysis
ARAR	applicable or relevant and appropriate requirement
CAA	*Clean Air Act of 1955*
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	*Code of Federal Regulations*
CWC	Central Waste Complex
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
Ecology	Washington State Department of Ecology
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
OSHA	Occupational Safety and Health Administration
RCRA	*Resource Conservation and Recovery Act of 1976*
RWP	radiological work permit
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
WAC	*Washington Administrative Code*

1.0 INTRODUCTION

This document provides the removal action work plan for disposal of waste generated from closure of the 183-H Solar Evaporation Basins in the 100-H Area of the Hanford Site. These wastes are being stored in the Central Waste Complex (CWC) located on the Hanford Site, which is owned and operated by the U.S. Department of Energy (DOE). The CWC is located in the 200 West Area. The Hanford Site, including the 100 and 200 Areas, was placed on the U.S. Environmental Protection Agency's (EPA's) National Priorities List under *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) in November 1989. The Washington State Department of Ecology (Ecology), EPA, and DOE (hereinafter referred to as the Tri-Parties) determined that hazardous substances stored in the CWC generated from the closure of the 183-H Solar Evaporation Basins present a potential threat to human health and/or the environment. The Tri-Parties also determined that a non-time-critical removal action is warranted for these wastes.

Alternatives for conducting a non-time-critical removal action were evaluated in the *Engineering Evaluation/Cost Analysis for Disposition of Mixed Waste from the 183-H Solar Evaporation Basin* (DOE-RL 2002). The preferred alternative identified in the engineering evaluation/cost analysis (EE/CA) was to send these wastes for treatment and disposal at the Environmental Restoration Disposal Facility (ERDF). The recommendation was approved in an action memorandum (EPA 2003) that was signed by the Tri-Parties. The lead regulatory agency for this action is EPA. This removal action work plan supports implementation of the non-time-critical removal action.

1.1 PURPOSE AND OBJECTIVE OF THE REMOVAL ACTION WORK PLAN

The purpose of this removal action work plan is to establish the methods and activities to perform the following removal action functions:

- Prepare waste containers for transport to the ERDF
- Transport the waste containers to the ERDF
- Treat and dispose the waste at ERDF
- Manage and dispose of all waste generated from these activities.

This removal action work plan satisfies the requirement in the action memorandum (EPA 2003) that DOE submit a removal action work plan outlining how compliance with applicable regulations (refer to Section 4.1) will be achieved for disposing the closure-generated 183-H Solar Evaporation Basin waste at the ERDF. This removal action work plan was prepared in accordance with Section 7.2.4 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1998).

The intent of this removal action work plan is to identify the basis for and to provide guidance for executing this removal action. The removal action takes place in an operating *Resource*

Conservation and Recovery Act of 1976- (RCRA) and *Clean Air Act of 1955-* (CAA) permitted facility (which will continue to operate at the completion of this action) and also at the ERDF. Because the functions of the action are within the scope of current facility operations, existing facility procedures and instructions will be used to perform and control the activities.

1.2 SCOPE AND OBJECTIVES OF THE REMOVAL ACTION

The primary goal of CERCLA removal actions is to minimize or eliminate threats to public health and/or the environment caused by the presence of hazardous substances. The EE/CA for the disposition of mixed waste from the 183-H Solar Evaporation Basins presents three alternatives for managing the mixed waste generated from basin closure. Based on the evaluation presented in the EE/CA, the treatment of waste exhibiting the characteristic of ignitability and the disposal of all waste at the ERDF was recommended as the most responsive approach to protect human health and the environment. The selection and approval of this approach are documented in the action memorandum (EPA 2003) for the 183-H basin wastes.

The scope of the approved removal action includes the 183-H basin waste generated from closure of the basins and the waste generated from testing the waste that is currently being stored in the CWC. The waste consists of approximately 12,300 drums and boxes. The removal action includes shipment of 183-H basin waste and the waste generated from removal activities to the ERDF for treatment (as needed) and disposal at the ERDF.

The objectives of the removal action are as follows:

- Reduce or eliminate the potential for exposure to hazardous substances above levels that are protective of workers, the public, and the environment
- Reduce or eliminate the potential for a future release of contaminants
- Protect workers from the physical hazards posed by management of the waste.

1.3 HISTORY AND DESCRIPTION

The 183-H Solar Evaporation Basin waste was generated from the closure of four solar evaporation basins located in the 100 Areas of the Hanford Site. The waste was placed in storage at the CWC. The CWC is a permitted mixed waste storage facility under RCRA.

1.3.1 History of Waste

The 183-H basins included a series of 16 concrete basins located in the 100 Areas of the Hanford Site that were originally used to support the 183-H Water Treatment Facility, which was associated with operation of H Reactor. In 1973, 4 of the 16 basins, which were the subject of the EE/CA and action memorandum, were designated to treat chemical wastes generated during the fabrication of nuclear fuel in the 300 Area. The remaining 12 basins were demolished in

1974. Very small quantities of compatible chemical wastes (i.e., unused inorganic laboratory chemicals) were also discharged into the basins on a nonroutine basis. The basin treatment process consisted of natural solar evaporation to achieve volume reduction. In 1985, the last shipment of process waste was sent to the basins.

Closure of the four 183-H basins used to treat chemical wastes began in 1986 and was completed in 1996. The primary document that enabled the cleanup to proceed was a RCRA closure plan approved by Ecology, which was included in the Hanford Facility RCRA Permit. Completed closure activities consisted of removing chemical wastes, sediment, and debris from the basins; sandblasting and scabbling the basin walls to remove contaminated concrete; demolishing and disposing the remaining concrete structure and equipment; and removing underlying soil.

Following removal of the bulk chemical wastes, certain waste streams (e.g., the bulk concrete and soil) were designated as low-level waste, and their disposal was evaluated using CERCLA authority and the EE/CA. The associated action memorandum concluded that the ERDF provided the best combination of protection and cost effectiveness for disposing the low-level waste. Other closure waste, including the concentrated chemical waste, was packaged into drums and boxes and prepared for storage, because at the time that these waste streams were generated, the Hanford Site lacked the capacity for treating and disposing of these mixed wastes (e.g., radioactive and hazardous). These wastes were transferred to the CWC in the 200 Areas of the Hanford Site between 1987 and 1991. The mixed waste streams are currently stored at the CWC in about 12,300 drums and boxes, and it is these wastes that are the subject of this work plan.

1.3.2 Facility Description

The CWC receives and stores solid radioactive and mixed waste that is packaged in drums and boxes in a safe and environmentally compliant manner. The CWC operates under RCRA interim status and CAA permits. The storage facilities comprising the CWC are located in the 200 West Area. The CWC includes 12 small mixed waste storage buildings (2401-W building and the 2402 series buildings), seven large storage buildings (the 2403 and 2404 series buildings), the 2420-W cask storage pad, the mixed waste storage pad, and the waste receiving and staging area. In addition, 27 modules are used to store low-flashpoint mixed waste, and 4 modules are used to store alkali metal waste.

The CWC provides interim storage for contact-handled mixed low-level waste, transuranic waste, and a small amount of low-level waste that are awaiting treatment and final disposal. The design storage capacity of the CWC is approximately 80,000 of 208-L (55-gal) drum equivalents, and the operational capacity is 64,000 drum equivalents. All newly generated waste must meet acceptance criteria set by the Hanford Site Solid Waste Acceptance Program. Waste is generally packaged in 208-L (55-gal) drums unless size, shape, or other form of the waste dictates the need for alternate packages. The storage buildings or pads have physical features that provide for segregated storage areas to maintain appropriate separation between groups of incompatible waste.

The ERDF provides the disposal of hazardous substances under CERCLA. The ERDF is a highly engineered structure designed to meet RCRA minimum technological requirements for landfills, including standards for a double liner, a leachate collection system, leak detection, and final cover. The facility consists of a multi-cell burial trench that is capable of receiving/disposing low-level radioactive waste, hazardous waste, or mixed (hazardous and radioactive) waste.

2.0 REMOVAL ACTION ELEMENTS

The removal action consists of locating the 183-H basin waste in the CWC buildings and then moving the waste to the waste receiving and staging area in preparation for waste shipment. The containerized waste will then be transported to the ERDF for treatment (if necessary) and disposal. The waste will be treated, if necessary, and disposed at the ERDF.

2.1 REMOVAL ACTION WORK ACTIVITIES

The removal activities will be performed in accordance with existing CWC and ERDF work procedures. Facility work procedures developed specifically for the removal action are WMP-370, Section 1.22, *Waste Acceptance Review for Waste Shipment to ERDF* (FH 2003) and the waste treatment plan discussed in Section 2.1.3.

Common industrial equipment (e.g., forklifts) will be employed to move containers, place drums on pallets, and place drums and boxes on/in a truck or trailer.

2.1.1 Preparation of Containers for Shipment

To prepare the 183-H basin waste for transport, the waste containers (e.g., drums, overpacked drums, and boxes) will be removed from their current storage location. Smears will be collected to confirm compliance with surface contamination limits as necessary. The containers will be relabeled, marked accordingly, and loaded onto pallets (as appropriate) in preparation for transport. If required, packages may be overpacked to ensure compliance with transportation requirements.

2.1.2 Shipment of Containers to ERDF

The 183-H basin waste containers will be transported from the CWC to the ERDF using trucks/flatbed trailers or other appropriate transport vehicles. Waste management personnel at the CWC will ensure that the waste is packaged and transported in compliance with U.S. Department of Transportation (DOT) requirements or applicable transportation safety analysis conditions.

2.1.3 Receipt, Treatment, and Disposal of Waste at ERDF

Waste will be received and off-loaded at the ERDF using common industrial equipment (e.g., forklifts). Waste not requiring treatment will be placed in the ERDF for disposal using common industrial equipment (e.g., forklift, crane, etc.). Waste requiring treatment or inspection for free liquids will be staged at the ERDF as necessary to support efficient operation. Waste treatment will be performed in accordance with the *Treatment Plan for 183-H Basin Waste Currently at Central Waste Complex* (BHI 2003a). After treatment, the waste will be placed in the ERDF for disposal using common industrial equipment (e.g., backhoe).

2.2 WASTE HAZARDS

The removal action consists of moving heavy containers that contain mixed dangerous and radioactive waste. The hazards consist of physical, chemical, and radiological risks.

The primary hazard is the physical hazard associated with moving heavy containers using industrial equipment and tools. Personnel may be exposed to situations where slips, trips, falls, crushing, or pinching could occur.

Chemical and radiological hazards may exist in the event of a container breach. Under normal operating conditions, chemical and radiological hazards are contained within the waste container. The primary radiological constituent of the waste is an alpha emitter that is shielded by the container wall. Personnel exposed to the waste would be at risk from the caustic and oxidizing potential of the waste.

3.0 SAFETY AND HEALTH MANAGEMENT CONTROLS

The CWC is a Category II nuclear facility, as described in HNF-SD-WM-ISB-007, *Central Waste Complex Interim Safety Basis* (FH 2002a). Nuclear safety is implemented via HNF-SD-WM-TSR-005, *Central Waste Complex Interim Operational Safety Requirements* (FH 1997).

The ERDF is a below Category III nuclear facility, as described in BHI-00370, *Safety Analysis for the Environmental Restoration Disposal Facility* (BHI 2002a).

3.1 EMERGENCY MANAGEMENT

All emergency planning and preparedness activities for the CWC are conducted in accordance with the requirements of HNF-RD-7647, *Emergency Preparedness Program Requirements* (FH 2002c), and meet the requirements of DOE/RL-94-02, *Hanford Emergency Management Plan* (DOE-RL 1999), applicable DOE orders, and state and Federal regulations (i.e., 29 *Code of Federal Regulations* [CFR] 1910.38 and *Washington Administrative Code* [WAC] 173-303-340, -350, and -360). The ERDF emergency planning and preparedness is conducted in accordance with BHI-SH-03, *Emergency Management Program* (BHI 2002c).

The Hanford Site Emergency Management Program ensures that, in the event of an emergency, actions are taken to prevent or minimize impact to workers, the public, the Hanford Site, facilities, and the environment; that emergencies are promptly recognized and classified; that emergencies are reported and notifications are made; and that re-entry activities are properly and safely accomplished.

3.2 HEALTH AND SAFETY PROGRAM

The CWC occupational safety and health program is based primarily on requirements contained in 29 CFR 1910 and 29 CFR 1926. The ERDF occupation safety and health program is conducted in accordance with BHI-SH-01, *ERC Safety and Health Program* (BHI 2003b). These requirements focus on workplace hazards and the controls necessary to mitigate risks to workers. Common hazards associated with removal action activities include, but are not limited to, walking/working surfaces, material-handling equipment, pinch points, and ergonomics.

3.2.1 Worker Safety Program

The CWC safety and health program was established for employees involved in treatment, storage, and disposal facility operations and activities. The program ensures the safety and health of workers during routine operations and activities at the CWC and complies with the requirements of 29 CFR 1910.120(p).

The Integrated Environment, Safety, and Health Management System provides the framework for all work activities conducted at the CWC. Elements within the framework include the following:

- An organizational structure and associated documentation that reflects the formal chain of command and the overall responsibilities of facility personnel (i.e., management to first-line worker)

- The Project Hanford Management System (Docs Online) procedures and other documents used for implementation of safety and health requirements identified by the Occupational Safety and Health Administration (OSHA), DOE, and national standards organizations

- Operations and activities conducted in accordance with facility procedures and process documentation
- A formalized process for hazard identification and tailoring of controls to meet the specific needs of diverse work activities
- A baseline assessment that addresses CWC facility and operational hazards and their associated controls
- Worker training commensurate with individual job duties and work assignments
- A medical surveillance program administered to comply with OSHA requirements, including 29 CFR 1910.120.

3.2.2 Site-Specific Health and Safety Plan and Activity Hazards Analysis

A baseline hazard assessment has been prepared for the CWC that identifies chemical, physical, biological, and ergonomic hazards and specifies the controls and requirements necessary for safe conduct of work. Activities to be performed are controlled by approved procedures. As part of the procedure development process, an automated job hazard analysis (AJHA) is developed by the work team and approved by involved subject matter experts. The AJHA addresses hazards specific to the work activity, including any identified subtasks. Elements of the AJHA include the following:

- Identification of operational work activity hazards
- Tailoring of controls to the work activity
- Specification of personal protective clothing and equipment
- Worksite control measures
- Emergency response
- Involvement of workers and subject matter experts in the AJHA development, review, and approval process.

In addition to the baseline hazard assessment and AJHAs developed for operational work activities, radiological work permits (RWPs) have been prepared for work involving potential radiological hazards. The RWP extends the radiological protection program (discussed in Section 3.2.3) to the specific operation. All personnel assigned to the project and all work site visitors must strictly adhere to requirements identified in the procedures, AJHAs, and RWPs.

Before work begins, a pre-shift briefing is held involving all CWC workers that includes information on the status of the facility and the activities approved for performance during the

work shift. Hazards that may be encountered and the associated requirements are also addressed. At the conclusion of the work shift, a post-shift briefing is held to obtain feedback from workers and status project efforts. Special briefings also may be held as needed throughout the duration of the project.

3.2.3 Radiological Controls and Protection

"Occupational Radiation Protection" (10 CFR 835) establishes the radiation protection standards, limits, and program requirements to protect workers from ionizing radiation that may result from the conduct of DOE activities. Radiation protection for the removal action activities occurring at the CWC is implemented by HNF-5173, *PHMC Radiation Control Manual* (FH 2001). Radiation protection for the removal action activities occurring at the ERDF is implemented by BHI-RC-01, *Radiation Protection Program* (BHI 2003c). Radiation protection also requires that measures be taken to maintain radiation exposures as low as reasonably achievable. A combination of personal protective equipment, personnel training, physical design features (e.g., confinement, remote handling), and administrative controls (i.e., limiting time in radiation areas) would be used to ensure that the requirements for worker and visitor protection are met.

3.3 MAINTENANCE MANAGEMENT

All facility maintenance activities for the CWC are conducted in accordance with the requirements of FH-SP-1233, *Maintenance Implementation Plan for Fluor Hanford Facilities* (FH 2002d), to satisfy the requirements of DOE Order 4330.4B, *Maintenance Management Program.* The CWC's facility maintenance program complies with the requirements of DOE Order 4330.4B, Chapter II, "Nuclear Facilities."

Fluor Hanford, Inc.'s maintenance program has been developed to ensure cost-effective maintenance and repair of DOE property, which includes the CWC facility. All of the requirements for facility system and component maintenance have been established based on safety classification and risk assessments of systems and components, as well as technical specifications, process requirements, and standards and code requirements. A graded approach was used to determine the level and frequency of maintenance necessary to ensure safe facility operation in an efficient and cost-effective manner.

Facility maintenance at the ERDF is performed in accordance with subcontract provisions in the facility operations subcontract with BHI.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

A removal action must, to the extent practicable, meet applicable or relevant and appropriate requirements (ARARs) and other Federal and state environmental statues. The ARARs must be met for onsite CERCLA actions (CERCLA, Section 121[d][2]). Onsite actions are exempted

from obtaining Federal, state, and local permits (CERCLA, Section 121[e][1]). Nonpromulgated standards, such as proposed regulations and regulatory guidance, are also to be considered to the extent necessary for the removal action to be adequately protective.

The ARARs for this removal action were identified in the action memorandum (EPA 2003). A discussion of how the removal action will comply with these ARARs is provided in the following subsections. Where pertinent to the discussion of compliance, materials to be considered have also been included.

4.1 WASTE MANAGEMENT

Waste management activities performed in this removal action shall be in accordance with the waste management ARARs identified in the EE/CA (DOE-RL 2002) and action memorandum (EPA 2003). Waste management will be performed in accordance with State of Washington regulations contained in WAC 173-303 and RCRA, Subtitle C, implemented via 40 CFR 260 through 268, as appropriate.

Activities at the ERDF will be also performed in accordance with the amended ERDF Record of Decision (EPA et al. 1997).

4.1.1 Waste Treatment and Disposal

The waste contains listed constituents consisting of various cyanide salts, formic acid , and vanadium pentoxide. Testing of the waste demonstrated that the waste complies with the Land Disposal Restrictions (LDR) treatment standard for cyanide and cyanide salts. The action memorandum (EPA 2003) authorized alternate numerical standards for formic acid and vanadium pentoxide. Testing of the waste demonstrated that the waste complies with the alternate numerical standards.

Waste that exhibits the characteristic of ignitability and/or toxic metals will be treated to remove the characteristic and will also be treated for underlying hazardous constituents, as applicable. Treatment will be performed at the ERDF as described by the waste treatment plan (BHI 2003a). Compliance with the waste treatment standards is described in Appendix A of this work plan.

Treated waste and waste that is not treated but possesses the potential for not complying with the ERDF WAC restrictions on free liquids shall be managed in accordance with an EPA approved treatment plan.

Radioactive wastes are governed under the authority of the *Atomic Energy Act of 1954* (AEA). The ERDF waste acceptance criteria (BHI 1998) implement the AEA requirements for radioactive waste disposal. The waste form and radioactive constituents of the waste are compared to the ERDF acceptance criteria to ensure compliance with radioactive waste disposal requirements.

The transportation of waste to ERDF shall be in accordance with DOT regulations 49 CFR 171 through 179 or a packaging safety analysis. The DOT requirements for shipping waste are implemented in HNF-PRO-156, *Onsite Hazardous Material Shipments* (FH 2002e).

The treatment and disposal of waste that is newly generated from removal action activities is the same as described above for the 183-H basin waste removal.

4.1.2 Newly Generated Waste

Radioactive or mixed waste may be generated during preparation and shipment of 183-H basin waste from the CWC to the ERDF and treatment and disposal at ERDF. The generation of radioactive and mixed waste will be minimized to the extent practical.

4.1.2.1 Waste Characterization and Designation. The waste will consist of consumable materials (e.g., paper, cloth, plastic, and tape) and equipment and tools (e.g., pallets). An inventory will be developed and maintained, which will form the basis for waste characterization.

The waste will be designated based on process knowledge. Process knowledge consists of an inventory of the waste material and noting whether the waste has contacted 183-H basin waste material. Material safety data sheets will be used, as appropriate. If a waste has come into contact with 183-H basin waste, then the listed codes will be applied to the waste. Waste generated at the CWC is designated in accordance with HNF-PRO-5121 (FH 2000b). Waste generated at the ERDF is designated in accordance with BHI-EE-10, *Waste Management Plan* (BHI 2002b)

4.1.2.2 Waste Handling, Storage, and Packaging. Radioactive or mixed waste at the CWC will be placed in drums, boxes, or an ERDF roll-off container located in an accumulation area. The waste will be packaged in steel drums and boxes (or other appropriate container with a plastic liner). The container will be stored at the CWC until shipment to the ERDF for disposal. Radioactive or mixed waste generated from treatment and disposal activities performed at ERDF will be treated as necessary and disposed at the ERDF facility.

4.2 NATURAL AND CULTURAL RESOURCE PROTECTION

Natural and cultural resource protection is not applicable to the removal action, as the removal action takes place in operating facilities which will continue operation and will be unaffected by the removal action.

4.3 ENVIRONMENTAL PROTECTION

The removal action is subject to clean air ARARs identified in the action memorandum (EPA 2003) including *Clean Air Act* (42 U.S.C. 7401, et seq.), "National Emissions Standards for Hazardous Air Pollutants" (40 CFR 61 Subparts H, and "Radiation Protection – Air Emissions"

(WAC 246-247). The removal action activities occurring at the CWC do not invoke the air permit requirements because the waste is maintained in a container with no potential to emit. Work activities at the ERDF are performed in accordance with an air monitoring plan that has been approved by the state of Washington. The air monitoring plan requires near field monitoring.

The *ERDF Explanation of Significant Difference* (EPA 1996), identifies requirements for leachate sampling and monitoring.

5.0 PROJECT MANAGEMENT AND ORGANIZATION

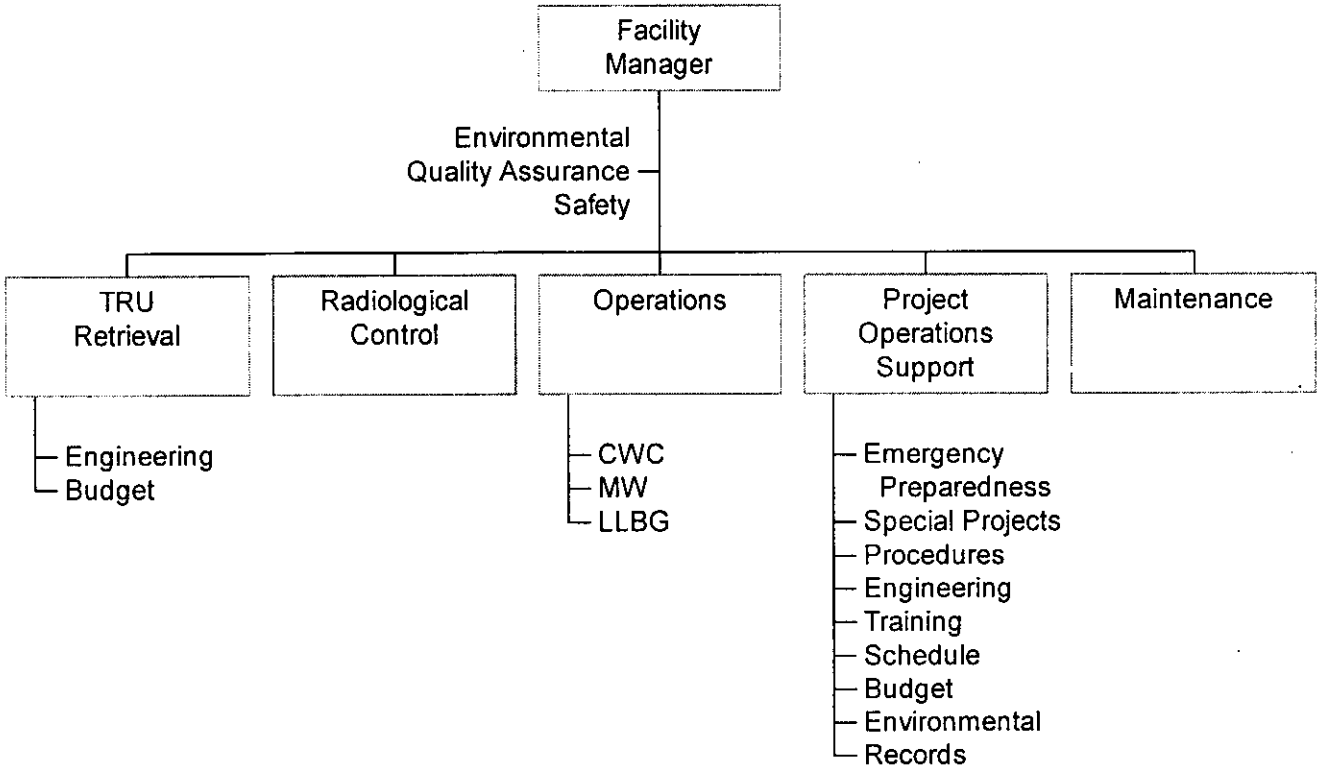
Figure 1 contains a chart that depicts the project management and organization for solid waste storage and disposal management of the CWC.

5.1 QUALITY ASSURANCE REQUIREMENTS

Quality assurance for the removal action is performed in accordance with 10 CFR 830.122; DOE O 414.1A, *Quality Assurance*; and *EPA Requirements for Quality Assurance Project Plans* (EPA 2001). The quality assurance activity is graded on the potential impact on the environment, safety, health, reliability, and continuity of operations. Specific activities include quality assurance implementation, responsibilities and authorities, document control, quality assurance records, audit/assessments, and self-assessments.

The removal action activities at the ERDF are performed in accordance with BHI-QA-01, *ERC Quality Program* (BHI 2002d).

Figure 1. Solid Waste Storage and Disposal Organization Chart.



5.1.1 Quality Assurance Implementation

The quality assurance activities for the removal action are implemented in accordance with HNF-SD-WM-QAPP-036, *Waste Management Project Quality Assurance Program Plan* (FH 2002i). Conditions adverse to quality will be identified and corrective action will be completed as in accordance with WMP-200, *Waste Management Project Procedures* and HNF-PRO-052, *Corrective Action Management* (FH 2002b).

5.1.2 Responsibilities and Authority

Project responsibilities and authorities are described in WMP-342, *Solid Waste Storage and Disposal Procedures*, Section 1.1, "Staffing and Organization Plan" (FH 2002g).

5.1.3 Document Control

The facility configuration is controlled in accordance with HNF-2954, *Configuration Management Program Document* (FH 2000c). Project procedures are managed in accordance with WMP-200, *Waste Management Project Procedures*, Section 1.1, "Administrative Procedure Control Process"; Section 1.16, "Document Review and Approval Designators"; and Section 1.18, "Technical Procedure Process" (FH 2002h).

5.1.4 Quality Assurance Records

Quality assurance records are controlled in accordance with WMP-342, *Solid Waste Storage and Disposal Procedures*, Section 1.2, "Records Program" (FH 2002g) and HNF-RD-210, *Records Management Program* (FH 2002f).

5.1.5 Audits/Assessments

External audits are performed by the Office of Independent Assessment and Quality Assurance and other organizations to ensure project compliance with quality assurance program requirements.

5.1.6 Self-Assessments

Self-assessments are conducted by project personnel in accordance with HNF-SD-WM-QAPP-036, *Waste Management Project Quality Assurance Program Plan* (FH 2002i) and WMP-200, *Waste Management Project Procedures,* Section 1.2, "Assessment Program" (FH 2002h).

5.2 PROJECT CLOSEOUT

The removal action shall ship the 183-H basin waste and newly generated waste that may be generated from shipment preparation to ERDF. The ERDF shall treat and dispose of the 183-H basin and newly generated waste in the ERDF. In accordance with the action memorandum (EPA 2003), a closeout report will be submitted to the regulatory agencies. The closeout report shall include a summary of the waste shipped to ERDF, project costs, and lessons learned.

6.0 REFERENCES

10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.

29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations*, as amended.

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APPENDIX A

183-H BASIN WASTE COMPLIANCE WITH TREATMENT STANDARDS

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183-H BASIN WASTE COMPLIANCE WITH TREATMENT STANDARDS

The 183-H basin waste is assigned with the listed waste codes that are noted in Table A-1. Some of the waste streams are also assigned the toxic metal and D001 codes (ignitable waste). Compliance with the land disposal restrictions treatment standards (evaluated as non-wastewater) are achieved in various ways, as noted in Table A-1.

- None of the 183-H basin waste streams require treatment for formic acid and vanadium pentoxide, as waste analysis has demonstrated that these constituents are less than the alternate treatment standard established via a variance from a treatment standard approved per the action memorandum.

- None of the 183-H basin waste streams require treatment for cyanide, as waste analysis has demonstrated that cyanide concentrations in the waste is less than the treatment standards shown in Table A-1.

- The 183-H basin waste streams that are designated as D001 (ignitable) will be treated to remove the characteristic and reduce the leaching of underlying hazardous constituents to less than their thresholds in accordance with 40 CFR 268.48. The treatment will be performed in accordance with a waste treatment plan developed for ignitable 183-H basin waste.

- Treated waste and waste that is not treated but possesses the potential for not complying with the ERDF WAC restrictions on free liquids shall be managed in accordance with an EPA approved treatment plan.

Table A-1. Compliance with Treatment Standards for 183-H Basin Waste.

Characteristic/ Chemical	Waste Code	Treatment Standard	Demonstration of Compliance
Ignitability	D001	Deactivation and 40 CFR 268.48 standards	Treat waste
Formic acid	U123	Site-specific treatability variance alternate treatment standard of <160,000 mg/Kg formic acid	Existing analysis of waste demonstrates compliance with alternate standard, no treatment required
Vanadium pentoxide	P120	Site-specific treatability variance alternate treatment standard of <85.1 mg/Kg vanadium pentoxide	Existing analysis of waste demonstrates compliance with alternate standard, no treatment required
Cyanide (CN) (various salts)	P029, P030, P098, P106	Total CN <590 mg/kg Amenable CN <30 mg/kg	Existing waste analysis demonstrates CN is less than standards
Chromium	D007	Cr < .6 mg/l TCLP and meet 40 CFR 268.48 standards	Treat waste
Mercury	D009	Hg < .025 mg/l TCLP and meet 40 CFR 268.48 standards	Treat waste
Silver	D011	Ag < .14 mg/l TCLP and meet 40 CFR 268.48 standards	Treat waste